

The Visible Faces of Plant Diseases and Pathogens

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Plant Pathology and Nematology

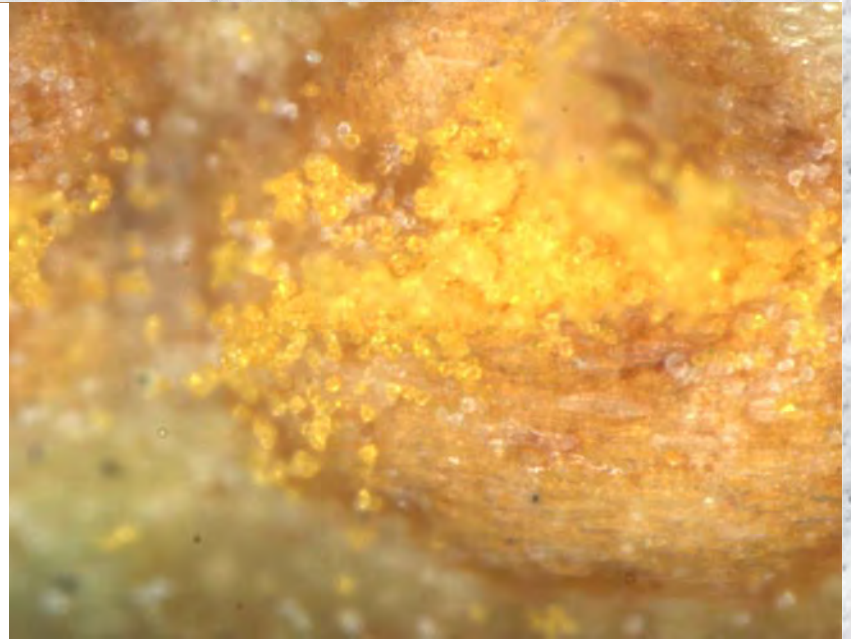
Nevada Department of Agriculture

Euonymus Powdery Mildews

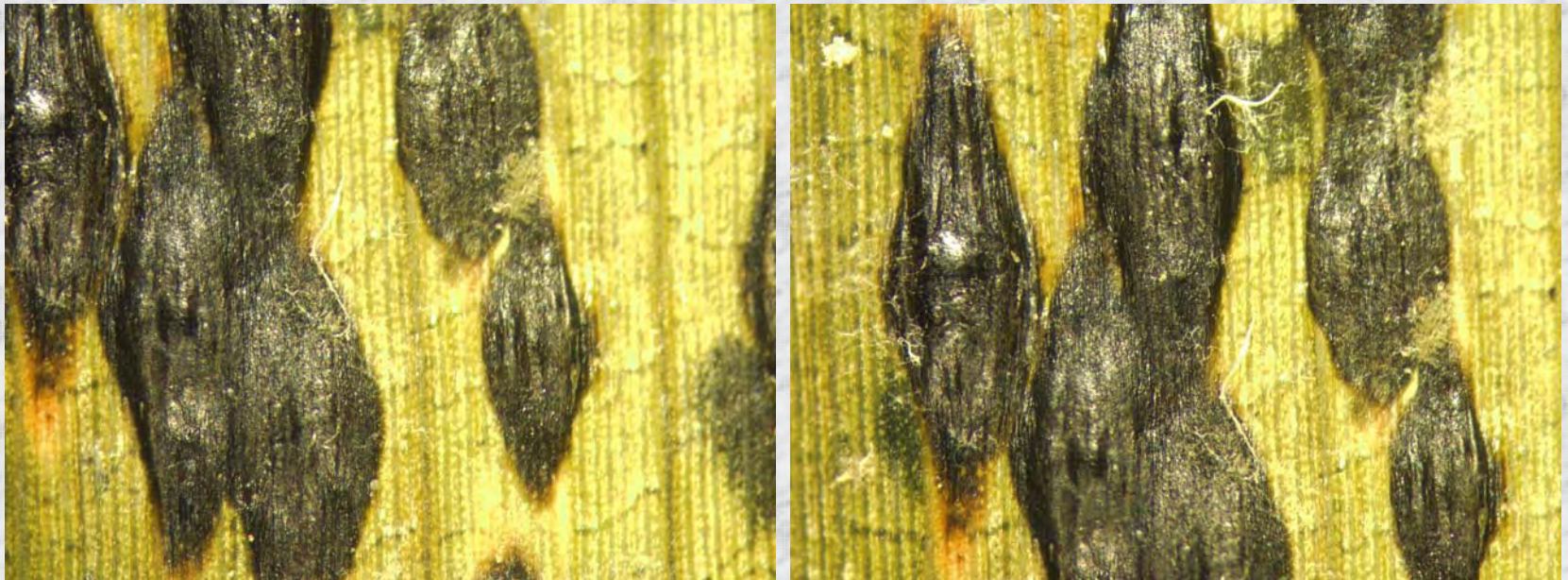
- Superficial growth of white powdery (fungal conidia) on both sides of leaves.
- Shade and high humidity favors the disease.
- Cultural practice control works.



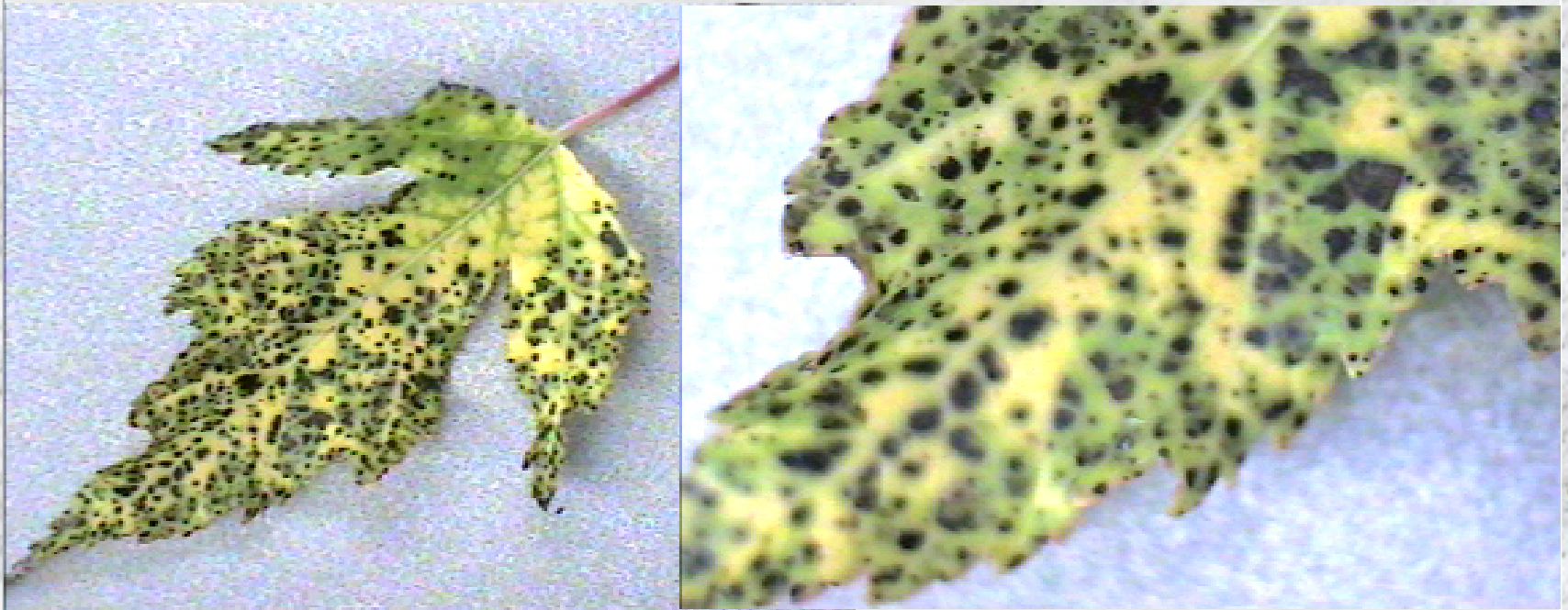
Daylily Rust



Diamond Scale on Palm



Amur Maple Leaf Spot



Giant Oak Gall Caused by Bacteria



Wet Wood Disease



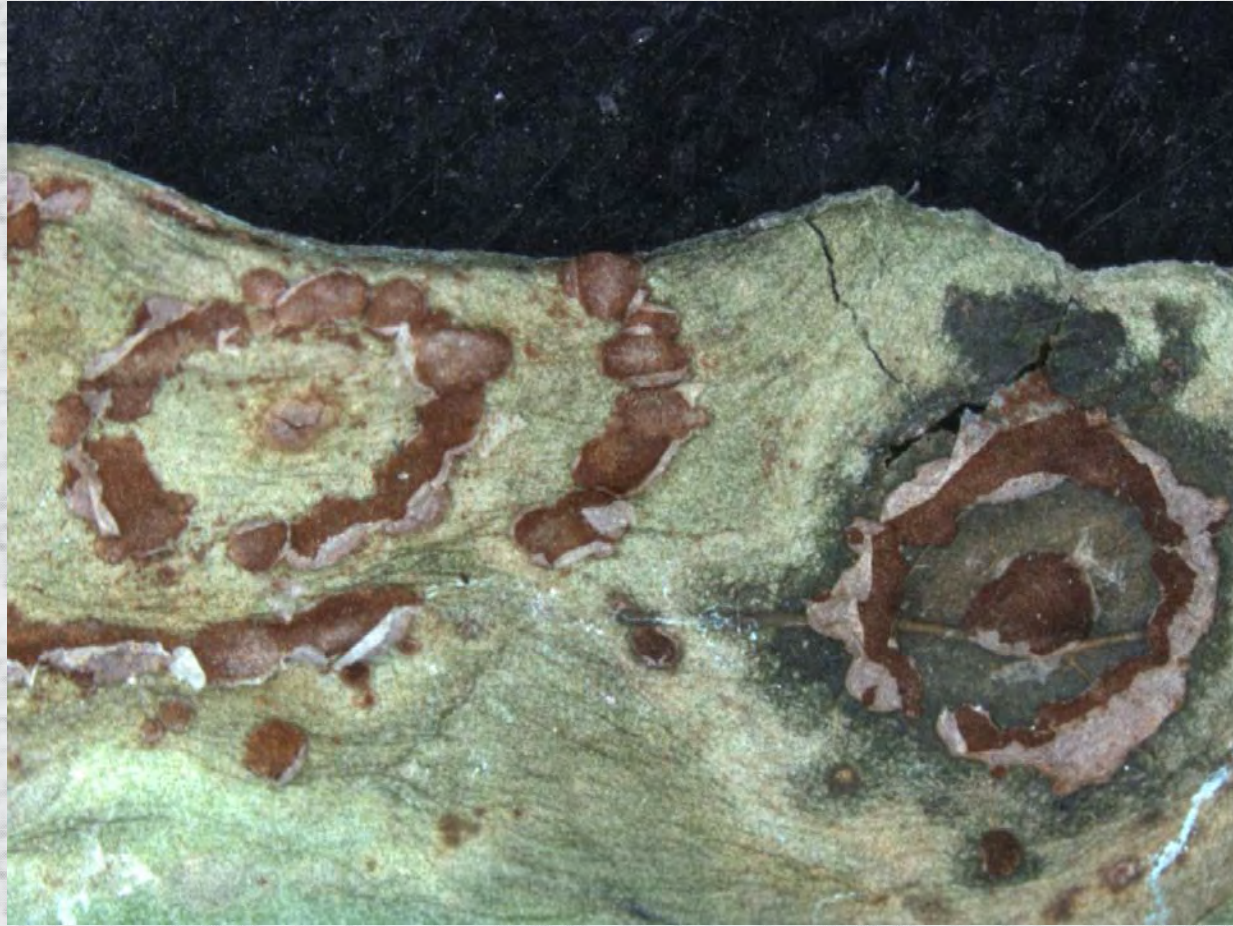
Silver Maple Bleeding Canker



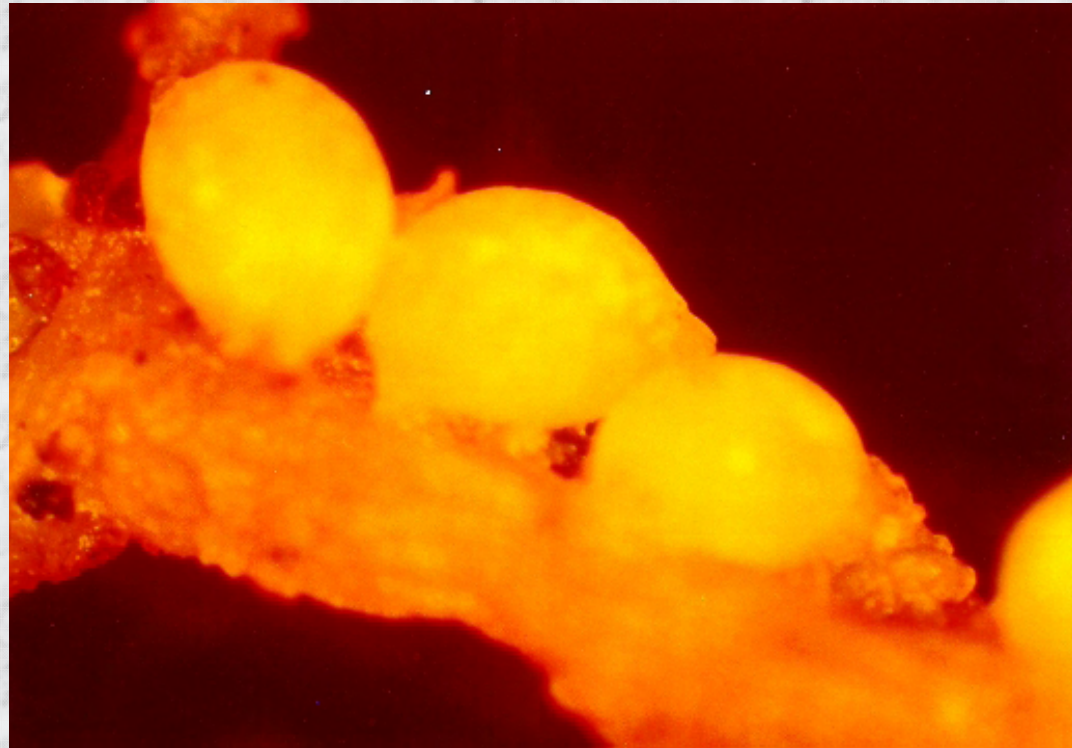
Insect Galls



Snapdragon Rust



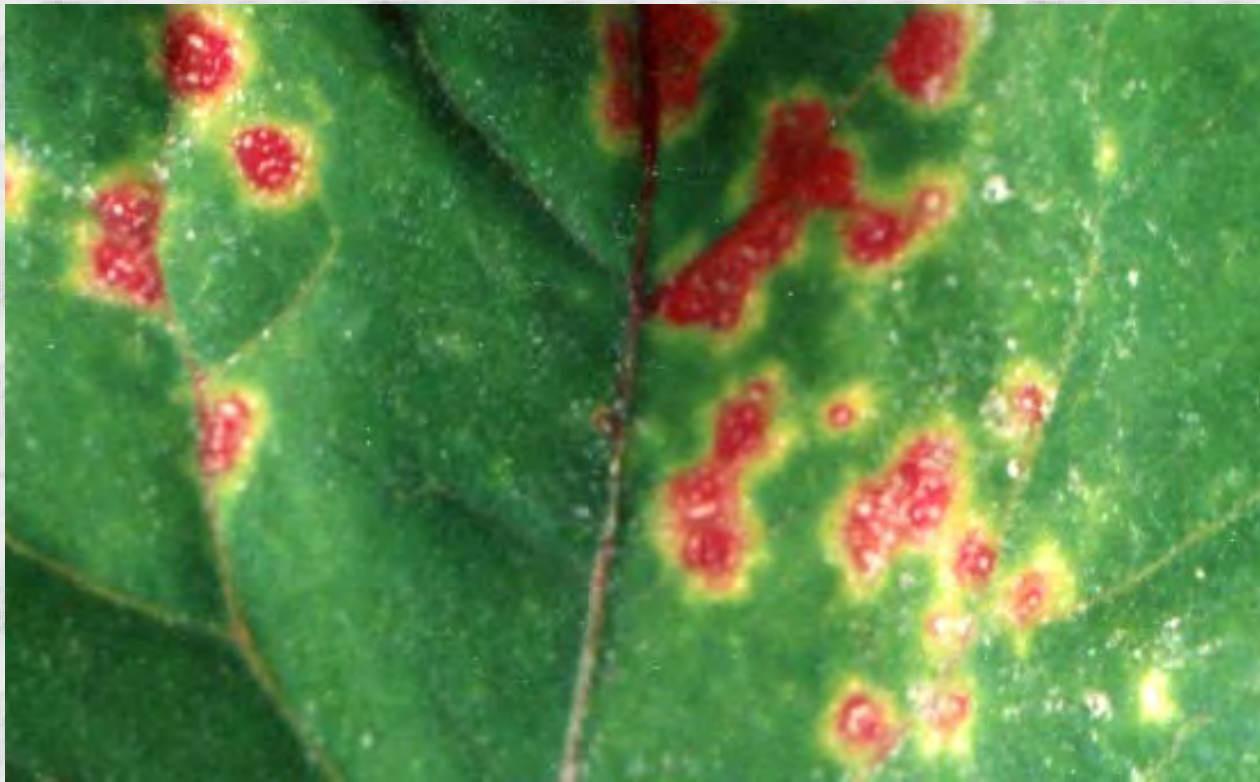
Clover Cyst Nematode



Root Knot Nematode on Cucumber



Necrotic Lesions Caused by Virus



Sapsucker Damage



Pine Needle Blight



Mosaic Viruses on Pumpkin



Phytophthora Infection of Pumpkins



Parasitic Dodder on Onion



Stem Bulb Nematodes on Onion



Onion White Rot



Onion Smudge

- Fungal fruiting bodies form concentric rings on the surface of the bulb scale
- The disease occurs late in the season and continues to develop on bulbs during storage.



Onion Pink Root Disease



Garlic White Rot



Plant Pathology Laboratory

- Culture
- Fluorescent Labeling
- ELISA
- PCR
- Real-time PCR



Nematology Laboratory



Nematode Extraction



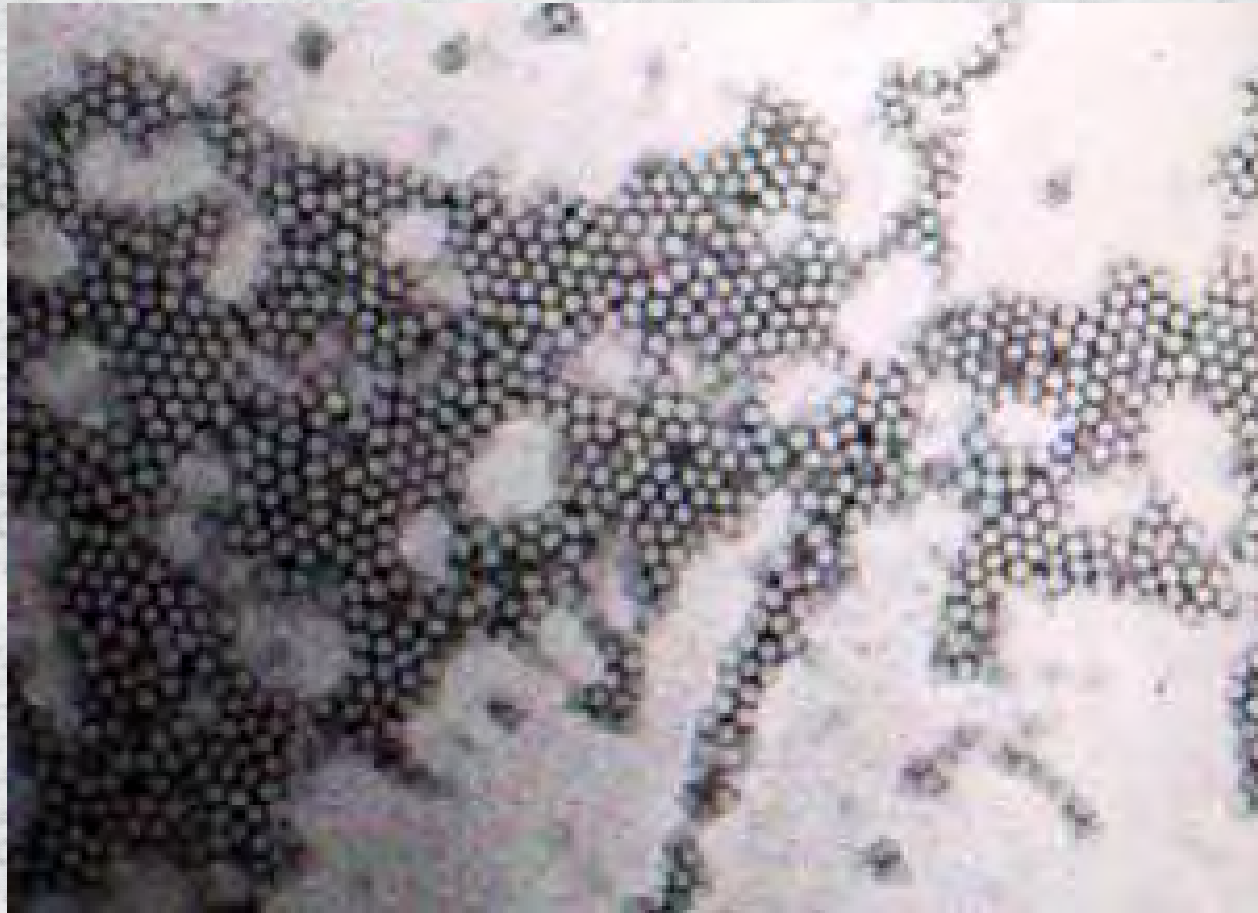
Phytophthora cactorum



Plant Parasitic Nematode



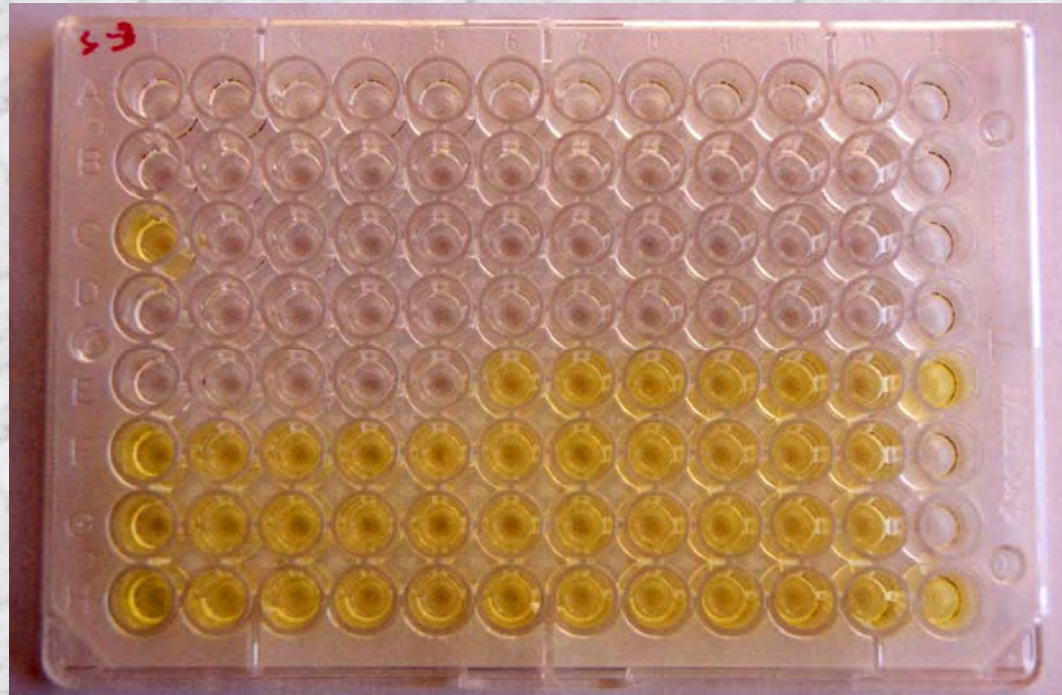
Tobacco Ringspot Virus Particles



ELISA Test

A technique to test presence of virus, bacteria, or fungi in plant tissue for up to 90 samples in one plate.

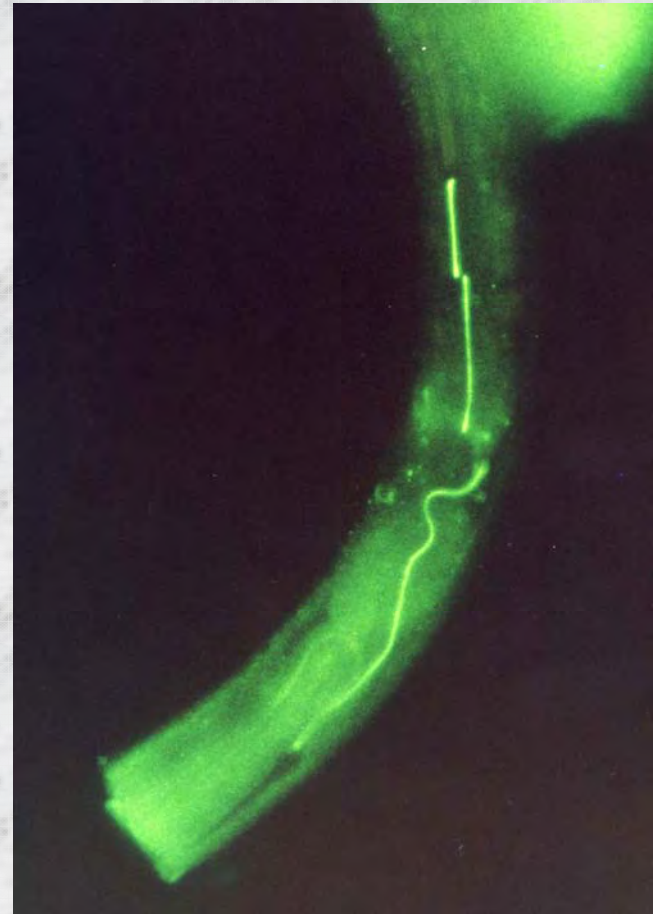
Right image shows potato virus S Positively detected In potato leaves (yellow wells)



Fluorescent Detection

A powerful technique to visualize pathogens such as viruses or bacteria in plant tissue or animal vectors, for example, nematodes and insects.

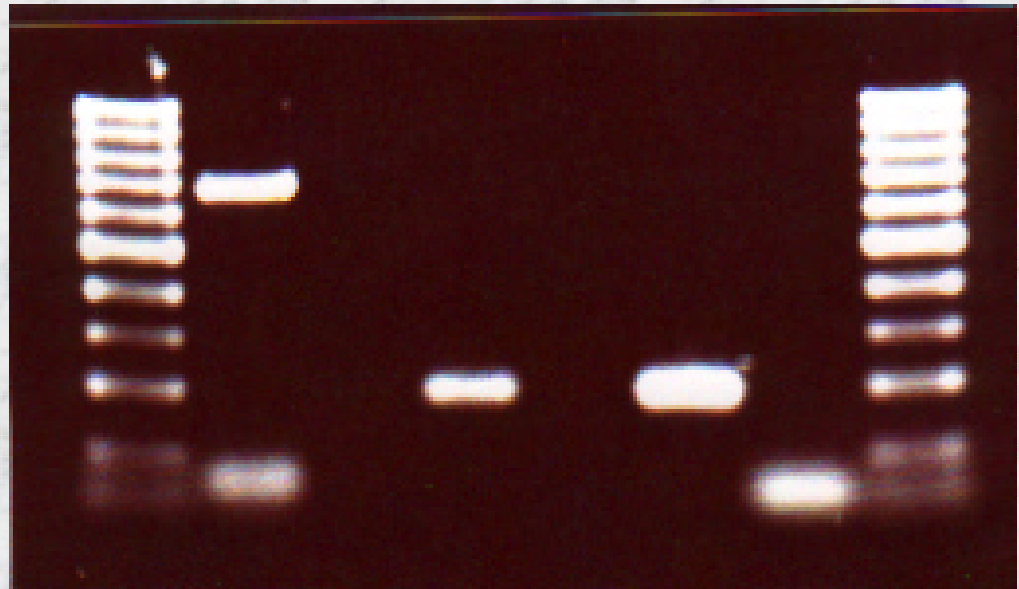
Right figure shows tobacco ring spot virus in the nematode vector.



PCR-Based Diagnosis

A DNA-based method to detect a pathogen by using unique primers. Presence of diagnostic bands verify positive detection.

Right image shows our result of one PCR test for SOD pathogen.



Real-time PCR Detection

An advanced technique to detect target pathogen in one hour.

Right figure shows positive detection of expression of a known gene in tissue

